

ABSTRACT

A voltage controlled variable capacitor, formed of a larger number of fixed capacitor segments and a corresponding number of switching elements, uses translinear amplifiers to control each switching element. Each translinear amplifier linearly switches from the fully off to the fully on state; a minimum number of switching stages (ideally only one) is in the mode-of-change at any one time with a minimum overlap. The arrangement achieves a nearly linear change of capacitance at linear tuning voltage change, while resulting in high Q-factor due to the low R_{DSon} and high R_{DSoff} of the fully switched stages. The invention eliminates temperature and voltage dependencies of other solutions like varactor diodes.